

Many of the renewables resource options presented do not require fuels or they utilize on-site waste products and, therefore, do not have related fuel extraction issues. Collecting wood residue from logging operations will have some environmental impact, but the incremental impact beyond that of a logging operation itself is minor if conducted in a sustainable manner, such as leaving behind polewood<sup>125</sup> for future growth. Since biomass is sourced locally, as discussed previously, the transportation distances will be relatively short, consuming less fuel for transportation compared to conventional fuels.

Biomass generation plants do require a footprint similar in size on a per megawatt basis to that of conventional generation to hold the plant equipment and fuel storage. However, due to the smaller scale of biomass plants (25-50 MW) compared to conventional baseload generation (250-2,000 MW), the magnitude of the habitat and aesthetic impact is much less per site.

Wind projects can occupy a large area of land (20 MW per square mile), but landowners can utilize the land for multiple functions once the turbines are in place. Regarding aesthetics and habitat impact, wind has become a controversial topic in certain areas of the country where viewsheds are of concern for local residents. Community opposition has delayed many projects in these aesthetically sensitive areas, and the issue is no different in North Carolina. In general, several state and regional surveys have found that a majority of residents in a community often support wind projects, but the opposing minority voice can often delay or halt a project regardless. Another reason for opposition is concern with bird migration and bat habitat disruption. These issues must be addressed by developers on a site-by-site basis, but the protocol in the wind industry is that if avian and bat studies for a specific site demonstrate a potential issue for bird and bat species, the project would not likely proceed.

## Waste Disposal

Lastly, waste disposal is also a major issue for coal and nuclear plants that most renewable generation do not face. Conventional plants using natural gas also do not face significant waste disposal issues.

The burning of coal creates solid waste, called ash, which is composed primarily of metal oxides and alkali. On average, the ash content of coal is 10 percent. Solid waste is also created at coal mines when coal is cleaned and at power plants when air pollutants are removed from the stack gas. Much of this waste is deposited in landfills and abandoned mines, although some amounts are now being recycled into useful products, such as cement and building materials.

Dealing with nuclear waste poses the biggest environmental issue for nuclear generation. Every 18 to 24 months, nuclear power plants must shut down to remove and replace the “spent” uranium fuel. This spent fuel has released most of its energy as a result of the fission process and has become radioactive waste. All of the nuclear power plants in the United States together produce about 2,000 metric tons per year of radioactive waste. Currently, the radioactive waste is stored at the nuclear plants at which it is generated, either in steel-lined, concrete vaults filled with water or in above-ground steel or steel-reinforced concrete containers with steel inner canisters. In addition to the fuel waste, much of the equipment in the nuclear power plants

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<sup>125</sup> Polewood refers to the growing stock of merchantable trees.